



PROFILE OF PRE-HOSPITAL CARE IN A MOBILE EMERGENCY CARE SERVICE IN NORTHEAST BRAZIL

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ABSTRACT

Objective: To describe the epidemiological profile of pre-hospital care performed by a mobile emergency service in the municipality of Picos, Piauí, Brazil. **Methods:** This is a cross-sectional, documentary and retrospective study with a quantitative approach, conducted in April and May 2020. We analyzed 4,220 records based on the visits performed by the Mobile Emergency Care Service to the occurrences that occurred between January 2019 and March 2020. Data were collected from the institution's individual care forms, organized through a form and analyzed in the light of descriptive statistics. **Results:** A slightly higher frequency of occurrences was observed in males (50.3%), predominance of the age groups from 20 to 30 years (30.7%) and higher than 60 years (34.2%), attendances performed by the Basic Support Unit (65.9%). Traumatic occurrences resulting from traffic accidents (68.5%) and cardiologic clinics (18%) were higher in percentage in relation to the other ones. Traumatic occurrences were more frequent from October to December and clinics in February and March. **Conclusion:** The epidemiological profile of the visits corresponds to the male population and age group greater than or equal to 60 years. Occurrences of a clinical nature, especially cardiac, predominated.

Keywords: Emergency medical services. Epidemiology. Prehospital care.

INTRODUCTION

With rapid and disordered population growth, there is a need for policies that meet the numerous demands of the population at the state, regional and municipal levels. In this respect, the promulgation of the National Emergency Care Policy (PNAU), instituted by Ordinance N 1,883/2003, is punctuated, with the aim of regulating and guiding the emergency care service in all federative units in the country⁽¹⁾.

Historically, the Mobile Emergency Care Service (SAMU) was one of the first milestones of the PNAU, initially inserted through a bilateral agreement signed with France and which, since its implementation in Brazil, has been a complex system of great social importance, whose main objective is the care of victims at the place of occurrence, where it seeks

to reduce the number of deaths, hospitalization time and complications originating from the absence of immediate care^(2,3).

Currently, SAMU is the largest representative of Pre-Hospital Care, serving about 75% of the Brazilian population. Its satisfaction with the resolution of health problems corresponds to 63%, in addition to 59% with the care provided⁽⁵⁾. Its structure consists of ambulances of Basic Support Unit (USB) and Advanced Support (USA), motorcycles, decentralized bases for ambulance support, Medical Regulation Center (CRM) and the administrative headquarters itself⁽⁴⁾.

The effectiveness of the service improves the prognosis of important injuries, such as trauma and stroke, in which shortening response time is essential⁽⁵⁾. In this sense, it also pointed out that the increase in the number of people victims of

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urban violence and traffic accidents, and the precariousness of health services in primary care, significantly increase the demand for public emergency services^(6,7).

Regarding the profile of the care provided by the SAMU, among the Brazilian studies that made this analysis, the results that the clinical occurrences corresponded to the majority of the occurrences, followed by external causes, are in agreement⁽⁸⁾. In addition, the service has as characteristic the agility and efficacy in the care of occurrences of surgical, psychiatric, pediatric, gynecological, obstetric and others⁽⁹⁾.

In the last four decades, external causes, involving accidents and the most varied forms of violence, are considered leaders in mortality and morbidity, generating more than five billion deaths worldwide, with accidents and homicides as the major causes of this increase⁽¹⁰⁾. However, it is noteworthy that between 1990 and 2015, a reduction in the mortality rate due to traffic accidents was identified in 26 of the 27 units of the federation, with the state of Piauí being the only one to present an increase in this rate (9.7%)⁽¹¹⁾, which highlights the need for studies addressing this theme.

Thus, this study is relevant because it shows the reality of the care provided by SAMU in a city located in the interior of Piauí state, a different scenario of large urban centers, besides allowing to demonstrate the importance of epidemiological research to obtain information that can support possible actions or public health projects aimed at minimizing the rate of injuries associated with medical emergency. The following research question was then formulated: "What is the characterization of the visits performed by SAMU 192 in Picos (Piauí)?" Therefore, this study aimed to describe the epidemiological profile of Pre-Hospital Care performed by a mobile emergency service in the municipality of Picos, Piauí, Brazil.

METHODS

This is a cross-sectional, documentary and retrospective study with a quantitative approach, based on the occurrences attended by SAMU 192 in the municipality of Picos - PI, Brazil, between January 2019 and March 2020. Data collection and processing occurred in April and

May 2020. The period selected for the study was considered due to the installation of pre-hospital components of the RUE in neighboring cities of the same health microregion.

The implementation of SAMU in the city of Picos (Piauí) took place on June 26, 2006, primarily as the Emergency Regulation Center (CRU). Currently, it has its operation as a decentralized base of SAMU 192 of the capital Teresina, under Ordinance N 709/MS-GM, of May 2014. The service reaches an estimated population of 78,222 inhabitants, dispersed in an area of 577,304 km²⁽¹²⁾, and its average attendance is 300 monthly visits. For this, it has two mobile service units, one USB and one USA, in addition to a motorcycle.

The study population corresponded to 4,627 records of occurrences attended by the Picos SAMU (PI). These were submitted to a previous analysis and only the occurrences with initial care of the victim by the municipal SAMU of Picos were included in the study. In turn, records with incomplete information were excluded in the case sheet. In the end, 407 records were considered inadequate for the study, and 4,220 considered for the study.

For data collection, a form containing the following variables was used: demographic data (gender and age group); type of support (USB and USA); and the category of occurrence, which can be clinical (cardiology, endocrinology, gastroenterology, intoxication, nephrology, neurology, oncology, pulmonology and unspecified); (traffic accidents, hit-and-run, drowning, Foreign Body Airway Obstruction (OVACE), assault, electric shock, burn/explosion, gunshot wound, gunshot wound, burial/collapse, animal injuries, falls, suicide attempts and unspecified; surgical, obstetric, pediatric, psychiatric or transfers, in addition to care not performed by the service.

In the processing of the data, the following flow was covered: access to the institution's information database; data extraction; regrouping of data into a specific Microsoft Excel® 2016 spreadsheet, with double typing and validation, in order to identify possible typos. Data analysis was based on the application of descriptive statistics, where absolute and relative frequencies were calculated for the variables.

It should be noted that this study did not

involve any type of direct or indirect intervention with humans. Secondary and anonymous elements were used, available in the institution's database, which were authorized for access to researchers, and ethical precepts recommended by Resolution N 466 of 2012⁽¹³⁾ were respected, and the research was approved by ethical opinion N 2,269,392.

When analyzing the information regarding the distribution of care provided by the SAMU of the municipality of Picos (Piauí), from January 2019 to March 2020, it was observed that the profile of the visits registered a higher frequency for males (50.3%) and in the age group of over 60 years (34.2%). Given the characteristics of the type of support available to the victims, 65.9% were performed by USB (Table 1).

RESULTS

Table 1. Distribution of SAMU/Picos attendances according to gender, age group and type of support. Peaks (PI), Brazil, 2020. (N= 4,220)

Variables	n	Total %
Gender		
Male	2123	50.3
Female	2097	49.7
Age		
< 1 year	47	1.1
1- 5 years	41	1
6-11 years	52	1.2
12-19 years	329	7.8
20-39 years	1296	30.7
40-59 years	1013	24
≥60 years	1442	34.2
Support Type		
USB	2,780	65.9
USA	1,440	34.1

Source: Data extracted from the USB/USA, SAMU service forms. Peaks (PI), Brazil, 2020.

Regarding the nature of the occurrences, there was a higher concentration of care for victims of clinical injuries, both in the UBS (62.6%) and in the USA (49.4%) (Table 2). There was also a considerable difference in care in the variable

"removals", considering that the USA is the means of transport adapted with equipment, materials and human resources ideal to perform this type of occurrence safely.

Table 2. Nature of occurrences according to USB and USA. Picos (PI), Brazil, 2020. (N=4,220).

Variables	N	Total %
USB		
Clinical	1741	62.6
Trauma	724	26
Obstetric	161	5.8
Psichiatric	76	2.7
Pediatric	50	1.9
Surgical	23	0.8
Removals	5	0.2
TOTAL	2780	100
USA		
Clínical	712	49.4
Trauma	398	27.7
Removals	213	14.8
Psichiatric	86	6
Pediatric	16	1.1
Obstetric	12	0.8
Surgical	3	0.2
TOTAL	1440	100

Source: Data extracted from the USB/USA, SAMU service forms. Peaks (PI), Brazil, 2020.

Table 3 shows the types of health problems of a clinical nature that most aroused care, in which, according to the cut-off from January 2019 to March 2020, the month of March 2020

presented the highest number of records (N= 215) and, in contrast, the month of February 2019 showed the lowest amount (N= 133).

Table 3. Detailing of clinical occurrences according to period and type of occurrence. Peaks (PI), Brazil, 2020. (N=2,453)*

Period	Cardiology		Neurology		Pneumology		Gastroenterology		Outthers**		Total	%
	N	%	N	%	N	%	N	%	N	%		
2019												
January	35	7.9	28	7.6	14	7.3	23	7,3	84	7,4	184	7,6
February	28	6.3	17	4.6	7	3.7	18	5,8	63	5,5	133	5,4
March	41	9.3	20	5.4	13	6.8	14	4,5	72	6,3	160	6,5
April	35	7.9	20	5.4	19	9.9	14	4,5	78	6,8	166	6,8
May	37	8.4	25	6.8	13	6.8	20	6,4	101	8,9	196	7,9
June	32	7.3	22	6.0	14	7.3	17	5,4	83	7,3	168	6,9
July	33	7.5	29	7.9	9	4.7	16	5,1	78	6,8	165	6,7
August	23	5.2	31	8.4	14	7.3	20	6,4	49	4,2	137	5,6
September	23	5.2	32	8.7	9	4.7	22	7,0	69	6,0	155	6,3
October	24	5.4	22	6.0	10	5.2	21	6,7	59	5,1	136	5,5
November	19	4.3	26	7.1	6	3.1	23	7,3	70	6,1	144	5,8
December	19	4.3	13	3.5	12	6.3	27	8,6	54	4,7	125	5,0
2020												
January	20	4.5	24	6.5	9	4.7	22	7,0	92	8,1	167	6,8
February	35	7.9	29	7.9	17	8.9	31	9,9	90	7,9	202	8,3
March	37	8.4	30	8.2	25	13.1	25	8,0	98	8,6	215	8,9
Total	441	100	398	100	191	100	313	100	1110	100	-	100

Source: Data extracted from the USB/USA, SAMU service forms. Picos (PI), Brazil, 2020. *Includes only occurrences of a clinical nature; **Endocrinology, Oncology, nephrology, intoxication and unspecified.

After verifying the occurrences of a traumatic nature attended during the study period, it was observed that the majority corresponds to traffic accidents and has the month of October 2019

with the highest number of traumatic occurrences (N= 91), and the month of February of the same, with the lowest number (N= 52) (Table 4).

Table 4. Detailing of traumatic occurrences according to period and type of occurrence. Peaks (PI), Brazil, 2020. (N=1,122)*.

Period	Transport Accidents		Falls		Agressions		Others**		Total	
	N	%	N	%	N	%	N	%	N	%
2019										
January	56	7.3	12	5.4	3	5.6	6	7.6	77	7.0
February	42	5.5	7	3.2	2	3.9	1	1.3	52	4.6
March	55	7.2	11	5	4	7.5	6	7.6	76	6.6
April	44	5.7	18	8.1	4	7.5	7	8.9	66	5.8
May	52	6.8	13	5.9	5	9.4	4	5.1	74	6.5
June	52	6.8	15	6.8	4	7.5	6	7.6	77	6.9
July	50	6.5	13	5.9	4	7.5	2	2.5	69	6.2
August	49	6.4	17	7.7	2	3.9	2	2.5	70	7.0
September	70	9.1	8	3.7	3	5.6	6	7.6	87	7.8
October	60	7.8	22	10	4	7.5	5	6.3	91	8.1
November	55	7.2	14	6.3	5	9.4	8	10.1	82	7.3
December	61	7.9	18	8.1	5	9.4	4	5.1	88	8.0
2020										
January	37	4.8	18	8.1	2	3.9	6	7.6	63	5.6
February	39	5.1	26	11.8	2	3.9	8	10.1	75	6.6
March	47	6.1	9	4	4	7.5	8	10.1	68	6.0
Total	769	100.0	221	100	53	100	79	100	1122	100

Source: Data taken from the USB/USA, SAMU service forms. Picos (PI), Brazil, 2020. *Includes only occurrences of a traumatic nature; **Running over, drowning, Foreign Body Obstruction (OVACE, in Portuguese), electric shock, burn/explosion, stab wound, gunshot wound, burial/collapse, animal injury, suicide attempt, and unspecified.

DISCUSSION

It is verified, when analyzing the epidemiological profile of pre-hospital care performed by RUE in Picos-PI, that male users exceed female numbers, which is also evidenced by a descriptive study that analyzed the profile of urgent and emergency care performed by SAMU in the Expanded Health Region of northern MG, in which, of the visits performed, there was a predominance of male users (55.22%)⁽¹⁴⁾. The factors that cooperate for this trend are the posture of low self-care and the removal of health services, especially those from primary care, by men, which helps unfavorably in the health of this population, evidenced by the high rates of morbidity and mortality⁽¹⁵⁾.

In developed countries, it is also possible to observe morbidity and mortality rates among men in constant growth. A study that evaluated male mortality trends in the United States between 1900 and 2010 noted that, although the American population has benefited from environmental, behavioral, social, technological and medical advances over the years, mortality rates in the male population continue to exceed those observed in the female population⁽¹⁶⁾.

In the study in issue, it is possible to assess a certain age disparity when compared to the profile of users of other pre-hospital services in the Northeast region, where young people are the ones who most require care. The age group from 20 to 29 years of age was pointed out by study in Recife (PE) as the most demanding⁽¹⁷⁾; on the other hand, in Rio Grande do Norte (RN), it is contained between 25 and 34 years old⁽¹⁸⁾. It is notepoint that the elderly population occupies the fifth place in the world mortality ranking, in which most cases are related to risk factors, such as the reduction of physiological reserves and functional capacity, comorbidities, frailty syndrome, alcoholism, polymedication, inadequate spaces, traffic dynamics and insertion in the labor market⁽¹⁹⁾.

It was also found that most occurrences were regulated for USB, especially those related to occurrences due to obstetric causes. It is explained, in relation to noninvasive measures, that these aim to provide basic care to the victim, such as positioning, guarantee of ventilation and circulation, immobilization, signaling of the

scene and safe transport to the emergency care unit⁽²⁰⁾. The greater activation of USB is due, in part, to the fact that pre-hospital injuries are of reduced severity and, often, its activation is connected to users who report diffuse complaints that could be solved at another level of care, especially in primary health care⁽¹⁸⁾. It is also recorded that factors such as the low cost of acquisition and maintenance, when compared to that of the USA, are those that may explain this finding.

Besides, it is worth mentioning that the basic support team consists of the care of people trained in first aid, nursing technicians and the driver's assistant. The advanced support unit is considered as an Intensive Care Unit (ICU) or Mobile Intensive Care Unit, consisting of fixed and mobile radiocommunication equipment, medical equipment to provide assistance as in a fixed ICU, that is, of greater complexity, for this reason, this care is performed exclusively by a doctor and nurse⁽²¹⁾.

It was found, in a study conducted in Uberaba (MG), that those called for obstetric causes represent 0.40% of SAMU care, and these causes, mostly, are linked to pregnant women with a mean age of 25.08 years, primiparous, in the third month of pregnancy and in labor⁽²²⁾. It was reported, in a study that investigated the sociodemographic and obstetric profile of parturients of a public hospital in the municipality of Picos, that 69.3% were between 20 and 35 years old, 51.7% were primiparous and most reported having had six or more prenatal consultations⁽²³⁾. In this context, it is perceived that the time of care and decision of the pregnant woman, education in the pregnancy-puerperal period and the investment in articulation of the care network are actions that can influence the reduction in the number of obstetric occurrences⁽²⁴⁾.

On the other hand, in the study in question, the highest number of occurrences configures emergencies of a clinical nature, especially those of a cardiac nature, a result similar to that found in other literatures^(25,18). Thus, the Ministry of Health has been introduced since 2011, with a view to reducing the Cardiovascular Care Line, which is a priority in RUE⁽²⁶⁾. It is estimated, by impacts by this type of injury, in other countries,

such as the United States, annual expenditures that can total about US\$ 70 billion by 2030⁽²⁷⁾.

It is perceived, when dealing with neurological problems, that these represent the second largest demand for care in the scenario of conducting the study. Thus, when dealing with injuries of this magnitude, as one of the main aggravating factors in pre-hospital care, is the ineffective response time⁽²⁸⁾. It is also emphasized that Picos does not have a reference service in Neurology that supports patients who enter the RUE from this type of disease; then, the need to transfer these patients to the reference services in Neurology in other municipalities arises.

Regarding the detailing of traumatic occurrences, the highest percentage is related to traffic accidents (68.5%), followed by the percentage of falls (19.7%). It is observed that, on continents such as Europe, transport accidents cause about 120,000 deaths and 2.4 million deaths per year. Thus, it is estimated that by 2030 it is the fourth most frequent cause of morbidity and mortality in the world⁽²⁹⁾. In this context, it is of fundamental importance to identify the most vulnerable groups and risk factors so that measures to prevent and control injuries can be outlined.

In this study, there was a predominance of traumatic occurrences in the months of September to December 2020, with a reduction in the first quarter of both 2019 and 2020. In this context, tourist-cultural programs, such as carnival and christmas cycle festivities, may represent a period of greatest risk for external causes⁽³⁰⁾. Thus, the reduction of cases in February may be related to the fact that the municipality studied does not have the tradition of performing great carnival festivities in this period, besides that in recent years there has been an intensification of supervision and interoperability between municipal and federal agencies, such as the Federal Highway Police, in order to inhibit the number of accidents on dates of greater road flow.

It is also believed that the adoption of educational measures of awareness and education at the local level may be related to this decrease, which lacks specific studies that find

this correlation. In addition, the importance of larger campaigns such as the Decade of Action for Road Safety (2011-2020), announced by the United Nations and internalized nationally as a Traffic Life Project (PVA) is emphasized⁽³¹⁾.

In Teresina, Piauí, when evaluating the profile of care for victims of orthopedic trauma, the predominance of young people, male, derived from traffic accidents, from the interior of the State, submitted to surgical treatment and with hospital discharge⁽³²⁾. In Picos, motorcycle accidents were mentioned as the main cause of trauma care in the pre-hospital service, i.e., an average of 50% of occurrences of this nature each year⁽²⁾.

The study is limited by the lack of an integrated system of information of the RUE on the occurrences attended, which made it impossible to verify the clinical outcomes of the patients attended, as well as the fact that the study is attached to a specific population and geographical area, which ends up making generalization impossible for other purposes. On the other hand, the incompleteness of some information is cited as a complicating factor in the analysis process.

CONCLUSION

In view of the above, it is concluded that, in the municipality of Picos (PI), Brazil, the male population and the age group greater than or equal to 60 years demanded a greater number of care by the emergency and emergency services, with USB being the type of unit used in most care. Occurrences of a clinical nature, especially cardiac, predominated. Occurrences of a clinical nature, especially cardiac, predominated. Nevertheless, those of a traumatic nature, especially with regard to traffic accidents, lack attention, given their high quantity in the period analyzed.

Finally, the importance of the study for epidemiological surveillance and public management purposes is emphasized, while it signals the need for prevention, promotion and intersectoriality of health actions in order to resolve, control or reduce such injuries within the emergency network.

RESUMO

Objetivo: Descrever o perfil epidemiológico dos atendimentos pré-hospitalares realizados por um serviço móvel de emergência no município de Picos, Piauí, Brasil. **Métodos:** Trata-se de um estudo transversal, documental e retrospectivo com abordagem quantitativa, realizado nos meses de abril e maio de 2020. Foram analisados 4.220 registros com base nos atendimentos realizados pelo Serviço de Atendimento Móvel de Urgência às ocorrências que aconteceram no período de janeiro de 2019 a março de 2020. Os dados foram coletados das fichas de atendimento individuais da instituição, organizados por meio de um formulário e analisados à luz da estatística descritiva. **Resultados:** Foi observada frequência de ocorrências ligeiramente maior em indivíduos do sexo masculino (50,3%), predominância das faixas etárias de 20 a 30 anos (30,7%) e maior de 60 anos (34,2%), atendimentos realizados pela Unidade de Suporte Básico (65,9%). As ocorrências traumáticas provenientes de acidentes de transporte (68,5%) e as clínicas cardiológicas (18%) se apresentaram em maior percentual em relação às demais. As ocorrências traumáticas foram mais frequentes no período de outubro a dezembro e as clínicas nos meses de fevereiro e março. **Conclusão:** O perfil epidemiológico dos atendimentos corresponde à população do gênero masculino e faixa etária maior ou igual a 60 anos. Predominaram as ocorrências de natureza clínica, principalmente cardiológicas.

Palavras-chave: Serviços médicos de emergência. Epidemiologia. Assistência pré-hospitalar.

PERFIL DE LA ATENCIÓN PREHOSPITALARIA EN SERVICIO DE ATENCIÓN MÓVIL DE URGENCIA EN EL NORDESTE DE BRASIL

RESUMEN

Objetivo: describir el perfil epidemiológico de la atención prehospitalaria realizada por un servicio de atención móvil de urgencia en el municipio de Picos, Piauí, Brasil. **Métodos:** se trata de un estudio transversal, documental y retrospectivo con enfoque cuantitativo, realizado en los meses de abril y mayo de 2020. Se analizaron 4.220 registros con base en las atenciones realizadas por el Servicio de Atención Móvil de Urgencia a los casos que ocurrieron en el período de enero de 2019 a marzo de 2020. Los datos fueron recolectados de las fichas de atención individuales de la institución, organizados por medio de un formulario y analizados a la luz de la estadística descriptiva. **Resultados:** fue observada frecuencia de casos ligeramente mayor en individuos del sexo masculino (50,3%), predominancia de las franjas etarias de 20 a 30 años (30,7%) y mayor de 60 años (34,2%), atenciones realizadas por la Unidad de Soporte Básico (65,9%). Los incidentes traumáticos provenientes de accidentes de transporte (68,5%) y las clínicas cardiológicas (18%) se presentaron en mayor porcentaje con relación a los demás. Los incidentes traumáticos fueron más frecuentes en el período de octubre a diciembre y las clínicas en los meses de febrero y marzo. **Conclusión:** el perfil epidemiológico de las atenciones corresponde a la población del género masculino y franja etaria mayor o igual a 60 años. Predominaron los incidentes de naturaleza clínica, principalmente cardiológicas.

Palabras clave: Servicios médicos de urgencia. Epidemiología. Atención prehospitalaria.

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